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Southeastern Europe

The countries of Southeastern Europe--including Romania, Bulgaria, and Moldova--occupy a strategic location on the west side of the Black Sea, exporting electricity through much of the Balkan Peninsula and transporting Russian natural gas to Western Europe and Turkey. Southeastern Europe also is a potentially significant transit region for Caspian oil exports to Europe.

Note: Information contained in this report is the best available as of November 2001 and is subject to change.



GENERAL BACKGROUND

The countries of southeastern Europe--here including [Romania](#), [Bulgaria](#), and [Moldova](#)--share a troubled history in addition to their geographical location. Since the Eastern European revolutions of 1989 and the fall of the Soviet Union in 1991, the three countries have been independent democracies, but each has had significant problems in transitioning from a centrally-planned economic system to a market-based economy. While Bulgaria and Romania avoided the warfare and bloodshed that devastated the [Balkans region](#) in the 1990s, they were both significantly affected by the economic embargo placed on [Yugoslavia](#), suffering several billion dollars' worth of losses due to disrupted trade, transport, and investment.

Moldova, although relatively less affected economically by the wars in the former Yugoslavia, suffered through a civil war of its own in the 1990s. Fighting broke out shortly after the country received its independence, paralyzing the country's already stagnant economy. [Russian](#) settlers and Moldovans on the industrialized left bank of the Dnistr River set up the secessionist Trans-Dnistrian Republic as the conflict stalemated. Moldova's economy has crept along as fighting has subsided, but there is no formal resolution

to the conflict in sight and Western investment, which is desperately needed, is nearly non-existent.

Unlike in central Europe and in the [Baltic countries](#), the process of shedding the totalitarian past has proceeded slowly in southeastern Europe. Political reform did not match the sweeping changes elsewhere in the former Eastern bloc, and as a result, former Communist leaders were able to hold on to the administrative controls of government. As a result, economic and structural reform in southeastern Europe was delayed. Although the pace of reform has picked up, the transition to democracy and a market-based economy in Romania, Bulgaria, and Moldova has lagged behind other parts of Europe.

In the past year, Romania, Bulgaria, and Moldova all have held general elections. In Romania in December 2001, voters elected Ion Iliescu to the presidency, returning the former Communist Party official to the post that he held from 1990 to 1996. In Moldova, the Communist Party swept to a resounding victory in February 2001 elections, winning an absolute majority in the parliament and installing Vladimir Voronin as president. In Bulgaria, former King Simeon II, returning to his homeland after the monarchy was abolished by the Communists in 1946 and entering politics for the first time, rode his National Movement for Simeon II to a victory in June 2001 parliamentary elections, then swore allegiance to a republican constitution and accepted the post of prime minister.

REGIONAL ENERGY ISSUES

Romania, Bulgaria, and Moldova occupy a strategic location in the world energy picture. Although none of the three countries is a major oil or gas producer, their geographic location between major producers and major consumers makes southeastern Europe an important transit point for oil and gas supplies. In addition, Romania is an important regional oil refiner, while Bulgaria is the region's major electricity exporter.

Caspian Oil Transit

Increasing oil and gas production in and around the [Caspian Sea](#), along with forecast increases of oil consumption in the European Union (EU), means that Bulgaria, Romania, and Moldova may play a strategic role in the European transport corridor to bring [Caspian oil exports](#) to European markets. The recent launch of the Tengiz-Novorossiisk Caspian Pipeline Consortium (CPC) pipeline from [Kazakhstan](#) to Russia means that additional oil will be transported via the Black Sea through the Bosphorus Straits, which is already a major [chokepoint](#) for oil tankers. The difficulty in navigating the narrow straits, exemplified by a number of accidents, has led [Turkey](#) to raise [environmental concerns](#) over the increase in tanker traffic through the Bosphorus.

The projected increase in oil exports from the Caspian Sea region in general, and Kazakhstan in particular, has led to the proposal of a number of [Bosphorus bypass options](#). Bulgaria, Romania, and Moldova all have made proposals to allow Caspian oil exports to bypass the Bosphorus, although Moldova, lacking a Black Sea port, is highly unlikely to transport any Caspian oil exports coming via the Black Sea. Ukraine has an advantage over the countries of southeastern Europe in capturing Caspian oil export transit, since its [Odessa-Brody pipeline](#) already has been completed. Nevertheless, several Bosphorus bypass pipeline options running through Bulgaria or Romania are being seriously considered.

Burgas-Alexandroupolis Pipeline

In January 1997, Bulgaria, [Greece](#), and Russia agreed on a plan to build an oil pipeline linking the Bulgarian Black Sea port of Burgas with Alexandroupolis on the Mediterranean coast of Greece. The proposed 178-mile, underground pipeline would allow Russia to export oil through the Black Sea while bypassing the Bosphorus. However, the \$600-million project has been stalled by a wide range of technical and economic disputes. Russia has ensured that the pipeline, with proposed capacity ranging from 600,000 barrels per day (bbl/d) to 800,000 bbl/d, will work at least at 50% of its capacity, and Russian oil major Yukos has expressed its interest in the project, which may ease concerns over filling the pipeline.

Russia, Bulgaria, and Greece have agreed on a memorandum of trilateral cooperation on the project, with plans to establish the Trans-Balkan Oil Company. In February 2001, the three countries agreed to conduct a

\$2.2-million feasibility study for the pipeline, and results of the second stage of the feasibility study were delivered on October 31, 2001. In addition to Yukos, a number of Greek and Bulgarian companies have indicated their interest in investing in the pipeline. In October 2001, officials for the three countries held a tri-lateral meeting, continuing negotiations to launch a joint-stock company to develop and construct the pipeline

Burgas-Vlore Pipeline

A 750,000-bbl/d pipeline connecting Burgas with the [Albanian](#) Adriatic port of Vlore via [Macedonia](#) also has been proposed. This pipeline proposal has received letters of acceptance from the governments of Albania, Bulgaria, and Macedonia, and a \$980,000 feasibility study, partially funded by the U.S. Trade and Development Agency, concluded that the 560-mile pipeline project was feasible. The Albanian-Macedonian-Bulgarian Oil (AMBO) Pipeline Corporation has been established with exclusive rights to construct the pipeline, which is estimated to cost between \$850 million and \$1.1 billion.

A joint venture to carry out the project was to be set up between AMBO and potential investors. Fundraising for the project already has begun, with construction originally scheduled to start in 2001 and completion by 2005. However, luring foreign investment to the troubled region has been difficult, and ethnic violence that erupted in Macedonia in February 2001 near the proposed route further hindered efforts to fund the pipeline's construction. In September 2001, AMBO's Ted Ferguson said that AMBO is hoping to begin construction of the pipeline by the end of 2001.

Constanta-Trieste Pipeline

Romanian government officials have advocated that a pipeline to transport crude oil from the Caspian Sea to European markets pass through its territory, claiming that Romania, which has sought to develop its infrastructure to increase its chances of sharing in the Caspian oil bonanza, offers the shortest route, best refining technology, and links via waterways to major ports in the West. The proposed 660,000-bbl/d Constanta-Trieste pipeline would allow crude oil from Kazakhstan to be shipped via the Novorossiisk port on the Black Sea to the Romanian port of Constanta, where it would then be piped to [Italy](#) across the Balkan Peninsula.

The pipeline, estimated to cost \$900 million to construct, would be used mostly to provide oil to the countries along the route, and would incorporate existing pipelines connecting Constanta with 10 refineries. Several alternatives exist for the route, with a proposed northern route transiting southern Hungary and central [Slovenia](#) before terminating at Italy's oil terminal of Trieste. From there, the Constanta-Trieste pipeline would be linked with the Trans Alpine Pipeline (TAP), which would carry the oil further to customers in Austria, [Germany](#), and the Czech Republic. The southern route for the pipeline, sometimes known as the South-East European Line (SEEL), would transport Caspian oil from Constanta via a similar route as the northern route, but instead would pass through Yugoslavia and an intermediate transit point at [Croatia's](#) Adriatic port of Omisalj before crossing Slovenia and ending at Trieste. The SEEL pipeline also would link to the TAP to deliver oil to Central Europe.

Feasibility studies have shown that both proposed Constanta routes are viable, but neither pipeline has moved forward as potential investors await a political accord providing security guarantees for the lines. Representatives of Romanian, Yugoslav, and Croatian oil companies have agreed that an inter-governmental accord likely would boost the pipeline's prospects and help to secure financial resources to construct the pipeline, which would provide Romania with a significant amount of revenue in the form of transit tariffs.

In addition to serving as a transit point for Caspian oil, Romania is hoping to offload some Caspian crude at Constanta and deliver it to its own refineries in order to offset the country's declining domestic production. Already, in June 1999, Romania's national oil company, SNP Petrom, signed a protocol with KazakhOil and KazTransoil to refine 140,000 bbl/d of Kazakh oil at Romanian refineries. Romania hopes to supply its own domestic market as well as transport refined products to Europe via barges on the Danube-Main-Rhine link. Romania also could use its own distribution network to transport refined products into other European

lines.

Russian Natural Gas Transit

In addition to oil, southeastern Europe also represents an important transit site for [Russian natural gas exports](#), mainly to Turkey. Russia's Gazexport, the export arm of Gazprom, transports natural gas from Russia via Ukraine and Moldova to Romania to Bulgaria and other Balkan countries. Russian natural gas is delivered via Bulgaria to Turkey, Greece, and Macedonia. In the past few years, the countries of southeastern Europe have sought to upgrade their pipeline links and increase their natural gas transit capacity in order to ensure that Russian natural gas continues to flow their way. Although Russia is looking to deliver natural gas directly to Turkey via the [Blue Stream pipeline](#) below the Black Sea, that will be in addition to natural gas flowing to Turkey via southeastern Europe. With Russia seeking to increase its natural gas exports, the countries of southeastern Europe will remain important transit centers.

In 1996, Romania and Russia reached an agreement on the construction of a 120-mile long pipeline from the Romanian-Ukrainian border to the Romanian-Bulgarian border, part of a project to develop the natural gas transit corridor in southeastern Europe. However, a shortage of funds in Romania delayed the construction until 1999, when Russia's Gazprom offered credit (in the form of natural gas) to Romania to finance the pipeline's construction. The first 54-mile segment of the pipeline, from Issacea to Negru Voda in southeastern Romania, was commissioned in December 2000. When the remainder of the pipeline is completed (scheduled for the first half of 2002), it will give Romania the ability to transit approximately one Tcf of natural gas through its territory.

Bulgaria also is increasing its natural gas transit capacity, mainly by widening its existing network and building new compressor stations rather than by building new pipelines. In the last two years, Bulgargas, which owns and operates Bulgaria's 1,554-mile pipeline network (which includes over 400 miles of transit pipelines), has enlarged the country's natural gas transiting network to pump more Russian natural gas to its Balkan neighbors. From a transit capacity of 283 Bcf of natural gas per year before the enlargement program began, in 2000 Bulgaria transported to Greece, Macedonia, and Turkey some 423 Bcf of Russian natural gas, up 14% from 1999, according to Bulgargas chief executive director Kiril Gegov. Nearly 388 Bcf of that natural gas went to Turkey, the region's biggest energy consumer. Under a 1998 agreement with Gazprom, Bulgaria's only natural gas supplier, transit volumes to Greece, Macedonia, and Turkey should increase to 494 Bcf after 2002 and to 670 Bcf by 2010. Bulgargas said that it would spend \$45 million in 2001 to continue enlarging the country's natural gas pipeline network.

Regional Electricity Exports

While Moldova remains a net electricity importer, both Bulgaria and Romania have become net electricity exporters in the past decade. Romania, which re-started electricity exports to Moldova in the wake of a violent snowstorm that devastated Moldova's northern power networks in November 2001, has sent its electricity supplies mainly to Moldova, while Bulgaria has supplied electricity to Turkey, Greece, Yugoslavia, and Macedonia in recent years.

Bulgaria is seeking to become the regional power hub in the Balkan Peninsula. In 2000, Bulgaria more than doubled its electricity exports, sending 5.6 billion kilowatt-hours (Bkwh) of electricity to its neighbors and earning more than \$105 million in the process. Turkey, the region's largest power consumer, imported 3.4 Bkwh of power from Bulgaria in 2000, up from 2.2 Bkwh of Bulgarian electricity in 1999. In addition, Bulgaria exported power to Greece, Yugoslavia, and Macedonia in 2000, and in August 2001, Bulgaria began exporting power to Albania for the first time ever. Bulgaria is hoping to increase electricity exports by an additional 60% in 2001.

Bulgaria and Turkey have agreed to increase Bulgarian power supplies to Turkey to 4 Bkwh in 2001 and 5 Bkwh in 2002. In order to fulfill these planned increases in electricity exports, in May 2001 Bulgaria began construction of a 400-kilovolt electricity cable linking Bulgaria's power system with Turkey. The 42-mile long link, which is estimated at \$35 million, will be the second such line between the two countries and will allow Bulgaria to maintain average exports of 3.4 Bkwh of power per year to Turkey under an agreement

until 2008.

ROMANIA

Throughout the 1990s, Romania lagged behind most of its Eastern European neighbors in the pace of economic restructuring. The slow pace of reform has hindered the development of a truly market-based economy, leaving Romania with one of the lowest living standards in Europe and hampering the country's efforts to join the EU. In 1996, Romanians elected Emil Constantinescu as president, replacing Ion Iliescu and the former communists and stepping up reform efforts. Constantinescu's government embarked on a macroeconomic stabilization and market reform program, including further restructuring of energy-intensive industries and the energy and utility sectors.

However, the social impact of price liberalization, combined with an austere government spending program and a 3-year recession from 1997-1999, led to growing frustration among Romanians as living standards continued to decline. In November 2000 presidential elections, former President Ion Iliescu received 37% of the vote, while Corneliu Vadim Tudor, an outspoken nationalist, polled 28% of the vote. Iliescu's Party of Social Democracy finished first in the parliamentary election with 38%, followed by Tudor's Greater Romania Party with 21%. Iliescu proceeded to win a December 2000 runoff for the presidency, vowing to return hope for a better life to Romanians.

Oil

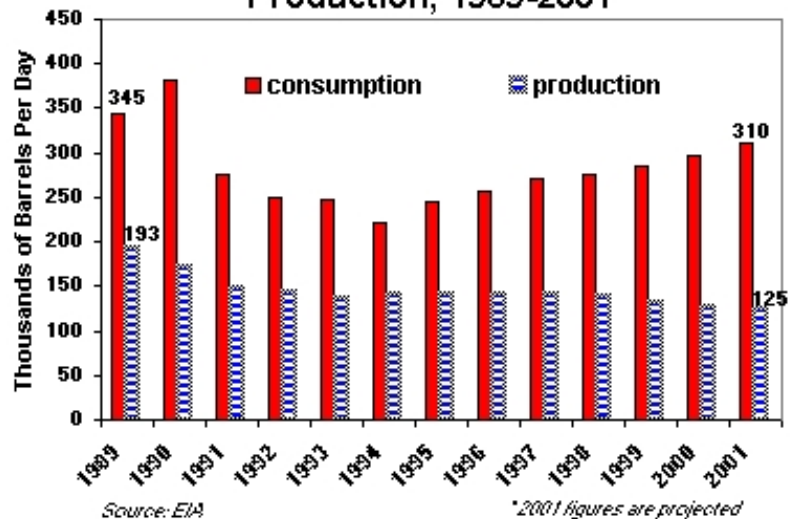
Romania has proven oil reserves of 1.4 billion barrels, and despite a steady decline in its crude oil production over the past 25 years, the country remains the largest oil producer in Central and Eastern Europe. From 294,000 bbl/d in 1976, Romania's oil production has decreased 57%, sliding to 127,400 bbl/d in 2000. With the country's oil production projected to dip to 125,000 bbl/d in 2001, Romania's oil demand now outstrips domestic production by a ratio of more than two to one. Romania's oil consumption, which dropped from 345,000 bbl/d in 1989 to just 220,800 bbl/d in 1994, has been on the increase ever since, reaching 298,000 bbl/d in 2000 and expected to increase to 310,000 bbl/d for 2001.

The Romanian government has committed itself to increasing domestic production of oil and gas in order to reduce the country's reliance on imports. The removal of state price ceilings, plus relatively high world oil prices in 1999 and 2000, allowed SNP Petrom, the vertically integrated national oil company, to restart some of its idled wells, and the introduction of Western technology and production methods is expected to boost Romania's reserves and production in the next few years. In addition, SNP Petrom, which is 92% state-owned, is being restructured to streamline its operations and management. In July 2001, Romania's Industry Minister, Dan Popescu, said that partial privatization of SNP Petrom would be launched in 2002 after the completion of the restructuring plan.

Romania also is opening up its oil and natural gas sectors to outside investors, and numerous oil and natural gas blocks have been opened for exploration in the past 12 years. Both Shell and Amoco came up dry in exploring for oil in western Romania between 1992 and 1997, but several smaller oil companies currently are active in the region. In June 1999, [U.S.](#)-based Castle Energy exercised options to acquire a 50% interest in three oil and natural gas concessions in Romania for \$385,000, while in September 2000, Sterling Resources ([Canada](#)) concluded a multi-million dollar deal to test for oil and natural gas in a 1.5-million acre block near Craiova in southwestern Romania. Sterling has committed to making at least \$7 million in investments in Romania, while Castle Energy, whose concessions total 3.1 million acres, has plans to spend about \$3 million on exploratory drilling. In addition, Forest Oil (U.S.) has two agreements in place with Romania and is awaiting approval of a third license in the Carpathian mountains.

Currently, around 10% of Romania's crude oil comes from offshore wells in the Romanian sector of the Black Sea, but Romania is seeking to increase that percentage. In 1998, [French](#)-Belgian oil company TotalFinaElf signed a 30-year exploration and drilling agreement with SNP Petrom. The companies agreed to explore an area of 4,000 square miles in the offshore Neptun oil block of the Black Sea, with TotalFinaElf paying \$10 million upfront and the option to pay up to \$500 million to develop the block if oil is discovered.

Romanian Oil Consumption and Production, 1989-2001*



Ukraine's recent discovery of commercially exploitable oil and gas deposits in a disputed area of the Black Sea has led to Romanian protests. In July 2001, the Cernomorneftegaz Company, in partnership with [British](#)-based JKN Oil & Gas, announced it had discovered approximately 73 million barrels of oil and 353 Bcf of natural gas near Zmiynyy Island, object of a territorial dispute between Romania and Ukraine. Romania, which calls the island *Insula Serpilor* (Serpents' Island), says that Ukraine has no right to conduct economic activities in the region while negotiations are in progress, while Ukraine has argued that Cernomorneftegaz's work is just for exploration purposes, which is not prohibited by bilateral agreements currently in force. Romania already is exploiting an oil deposit to the west of the island and pumping the fuel through a pipeline to its port of Constanta.

Downstream/Refining

With 10 refineries and an overall refining capacity of approximately 522,000 bbl/d, Romania has the largest refining industry in the region. Romania's refining capacity far exceeds domestic demand for refined petroleum products, allowing the country to export a wide range of oil products and petrochemicals, such as lubricants, bitumen, and fertilizers, throughout the region. However, nearly all Romanian refineries are underutilized because of a lack of crude oil supplies, and the majority remain in the government's hands, running at 50% of capacity or less and needing repair. Years of low investment have left the country's refining industry in poor health, requiring massive amounts of capital to modernize and improve efficiency.

Several refineries have been privatized, injecting some much needed capital for maintenance and upgrades. In early 1998, Russia's Lukoil paid \$300 million for a 51% stake in the Petrotel refinery in Ploiesti, and on November 1, 2000, the Romanian State Property Fund agreed to sell the [Dutch](#)-led Rompetrol Group BV a 70% stake in the Petromidia Navodari refinery, Romania's largest, for \$50.5 million. The Dutch-Swiss company agreed to take over the refinery's \$340-million debt and promised to invest \$225 million over the next five years to modernize it, streamlining capacity at 54,000 bbl/d. In a cost-saving measure, Romanian authorities had shut down the Petromidia refinery in 1999, but under its new management, the refinery resumed operations in February 2001, processing an average of 5,600 bbl/d. In addition, SNP Petrom is planning to pump \$236 million into upgrading its two refineries, Arpechim and Petrobrazi, over the next two years.

Natural Gas

Since 1983, when Romania's natural gas production peaked at 1.4 Tcf, the country's natural gas output has declined nearly 65%, dropping to 501.5 Bcf in 1999. In its difficult transition to a market economy, Romania's natural gas demand has decreased precipitously as well, with consumption decreasing 55% from 1989 to 1999, from 1.4 Tcf to 621.5 Bcf. Romania has proven natural gas reserves of 13.2 Tcf, but additional exploration has been discouraged by the country's economic woes and the poor investment climate. Also, the slow pace of reform has prevented potential investors from entering the Romanian natural

gas market to help boost current levels of production. As a result, Romania is reliant on imports to meet its natural gas consumption needs.

Russia is Romania's main source of natural gas, but Romania has attempted to diversify its supply sources by concluding contracts with companies such as Germany's Ruhrgas and the Netherlands' Gasunie. Russia remains Romania's major supplier, and better connections with the Ukrainian pipeline system have allowed Romania to access additional [Russian natural gas via Ukraine](#). In December 1999, a 12-mile pipeline link between the Ukrainian city of Khust and Satu Mare in northeastern Romania was completed, giving the country access to the *Soyuz* export pipeline and allowing Romania to import up to 13 Bcf per year of additional Russian natural gas. In the future, the Khust-Satu Mare pipeline may allow Romania to receive natural gas from as far away as Central Asia.

In addition, Romania has been developing contacts to import more Russian natural gas via Moldova to supply customers in Romania's northeast. In April 2001, Russian natural gas trader Itera, along with Romanian and Moldovan natural gas companies, confirmed its plans to build a 72-mile pipeline connecting the Moldovan cities of Dorchia and Ungheni with the Romanian town of Iasi. The \$60-million pipeline, with an annual capacity of 141 billion cubic feet (Bcf) of natural gas per year, is expected to be completed in 2002.

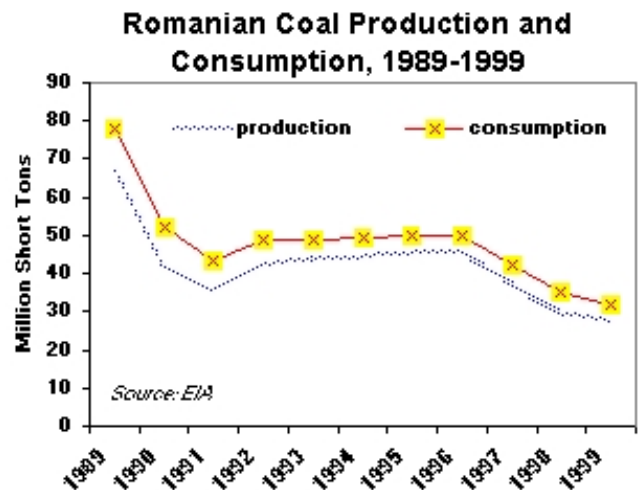
In order for these potential imports to reach Romanian households, the country is restructuring Romgaz, the state-run natural gas utility, and starting to modernize its aging natural gas distribution system. In June 2000, the Romanian government approved the reorganization of Romgaz, restructuring it into four business units: Transgaz, for transport; Depogaz, for underground storage of natural gas; Exprogaz, to make and trade in oil products and carry out hydrocarbon exploration; and a distribution company with two subsidiaries. Romania also has begun to upgrade the country's 9,000-mile pipeline network, attempting to cut down on natural gas leakage and modernizing measuring stations to make gas consumption more efficient. Corroded steel pipelines are being replaced with polyethylene pipelines, and underground storage capacity is being increased from the present 39 Bcf to 162 Bcf by 2010. In addition, in July 2001 Germany's Ruhrgas became the first foreign company to invest in Romania's natural gas distribution network.

Coal

Romania's ailing coal industry is in dire need of major restructuring. Since the revolution of 1989, when Romanian coal production peaked at 66.4 million short tons (Mmst), the country's production has dropped nearly 60%. Romania's severe economic problems, combined with a parallel drop in coal demand and a lack of reform, have crippled the country's coal mining industry. After leveling off in the mid-1990s, the decline in Romania's coal production has accelerated in the past four years as pits began to be shut down and miners periodically have gone on strike to protest poor working conditions and to demand payment of wage arrears owed to them by the government.

Most of Romania's estimated 3,980 Mmst of coal reserves is lignite and sub-bituminous coal, and much of that is located in the Jiu Valley. The coal-rich region, has been hit particularly badly by problems in the coal sector, with 18,000 miners losing their jobs in 1997 alone. Around 70,000 jobs in Romania's coal sector have been cut in the last four years, and World Bank officials have stated that Romania must shut 29 pits in the Jiu Valley, out of a total of 230 across the country, over the next three years. Starvation caused by the 1997-1998 job severance program led to bloody clashes, suicides and mass hunger strikes by Romanian miners, and in 1999, miners protesting the shutdowns and unhappy about wage arrears clashed with government forces as they marched to Bucharest to voice their concerns. Former Prime Minister Radu Vasile was forced to bargain with striking miners to negotiate a settlement to the confrontation before further violence erupted.

Miners' unions have warned of difficult conditions, including poor ventilation and obsolete equipment, in Romanian coal mines. On August 7, 2001, 14 miners were killed in an explosion in the Vulcan coal mine in the Jiu Valley, the latest in a pattern of deadly accidents in the region. A Romanian government investigation found that the explosion was caused by a violation of operation regulations while handling explosives, and as a result, eight officials held responsible for the blast were dismissed from their jobs.



Despite the industry's problems, Romania is making plans to increase coal production levels in the next decade. With reservoirs at the country's hydropower stations drained to less than 40% of capacity by a severe drought in the summer of 2000, Romania's plans to make up for reduced hydropower generation by boosting coal production is a major relief for domestic coal producers. In the first two months of 2001 alone, coal-mining productivity in Romania rose 15% year-on-year. However, Romania's attempts to revive its coal-mining industry by squeezing out as much coal as possible from existing mines as a cheaper alternative to other fossil fuel imports could slow the pace of restructuring. The government's strategy also could delay, if not cancel, plans by the World Bank to co-finance several coal projects in the country.

Electricity

Romania has installed electric-generating capacity of 22.2 gigawatts (GW), but in 1999 the country produced just 49 Bkwh of electricity, continuing a downward trend that has seen Romania's power generation drop 32% since 1989. Of the 49 Bkwh produced, 54% came from thermal-fired (oil, natural gas, and coal) power plants and 36% from the country's hydropower plants, with the remainder from Romania's sole nuclear power plant. Nevertheless, plummeting domestic electricity consumption, largely due to the Romania's economic woes and the collapse of industrial demand, has assured Romania's status as a net electricity exporter. In 1999, Romania consumed 44.8 Bkwh, a 40% decrease from the country's 1989 level of 74.7 Bkwh.

Approximately 60% of Romania's existing power capacity is more than 20 years old, and about 8 GW will need to be rehabilitated or replaced by 2010. According to the government's medium-term energy strategy, Romania is planning to rehabilitate 10 thermal power stations, with a combined capacity of 1.36 GW, between 2000 and 2005. Rehabilitation of these units will cost an estimated \$460 million, while power-generating units with a total capacity of 5.9 GW are planned to be shut down. In addition, technical losses in Romania's inefficient power transmission and distribution system means that an estimated 13% of all electricity dispatched is lost before it reaches any customers.

Romania recently has begun to take steps to reform the country's power sector in order to bring in much needed investment for maintenance and upgrades. Romania removed price ceilings in 1997, but at less than 70% of the average prices in EU member states, the country's electricity prices are currently the lowest in Europe. In 2000, the Romanian government split up Conel, the state-owned electricity company that accounted for nearly 98% of all power produced in the country, and created independent companies to handle the country's power generation, transmission, and distribution. Electrica, the state-run electricity distributor, is undergoing further restructuring to divide the company into eight divisions prior to its planned privatization. The first of the eight distribution networks, Constanta and Timisoara, originally were planned to be sold off by the end of 2001, but Electrica General Manager Lucian Boghiu has stated that privatization is unlikely to happen this year.

In addition to restructuring efforts, Romania is opening its power market in line with the EU's electricity directive. In May 2001, Romania's Ministry of Industry and Resources announced that electricity prices will

be marked up by 6.2%, the latest in a series of tariff increases. Earlier in 2001, Transelectrica, which was established to handle Romania's transmission system, received a \$51.5-million loan from the European Bank for Reconstruction and Development (EBRD) to help upgrade its transmission system and to integrate the Romanian grid into the western European power network, the Union for the Coordination of Transmission of Electricity (UCTE). ANRE, Romania's power market regulator, has granted licenses to a number of large energy consumers, accounting for 15% of Romania's total power consumption, allowing them to select their own electricity suppliers. ANRE has licensed 11 independent electricity producers and is planning to open the energy market to 45% in the next few years.

With the government demonstrating its commitment to reform, investment in Romania's power sector is increasing, especially in the country's hydropower plants. In 1999, Switzerland's Sulzer Hydro won a \$154-million contract from Hidroelectrica, Romania's hydropower producer, to refurbish six turbines at the Portile de Fier I (Iron Gates I) power plant on the Danube River. The Portile de Fier I plant has 12 Kaplan turbines, of which six are operated by Romania while the remaining six are operated by neighboring Serbia. Under the project, which is expected to be completed by 2005, the six Romanian turbines' total capacity is to be boosted to 1,290 MW from the present 1,070 MW. In addition, a joint venture between Hidroelectrica and Harza (U.S.) has been working on the Siriu-Surduc-Nehoiasu hydropower system on the Buzau river in eastern Romania. Hidroelectrica is seeking partners for 14 other hydropower projects (including completion of works, upgrading, and management) with a total capacity of 780 MW.

Nuclear

Romania has one nuclear power plant, at Cernavoda on the Danube River. Romania's former dictator, Nicolae Ceausescu, had planned to build five reactors at Cernavoda, but construction was halted after his overthrow in 1989. With the help of international investors, work resumed on the plant in the mid-1990s. The first reactor at Cernavoda, with a capacity of 750 MW, came online in December 1996 and now accounts for approximately 10% of the country's power generation.

In April 2001, Nuclearelectrica, which operates the Cernavoda plant, announced that it was close to concluding a \$700-million deal with Italy's Ansaldo and Atomic Energy of Canada Limited (AECL) to finance completion of the 700-MW second reactor at Cernavoda. The two companies helped to build and commission the first reactor in 1996. Romania's share of the costs for the completion of the second reactor, which is approximately 40% complete, is estimated at \$400 million. With construction to set to resume in 2002, Nuclearelectrica envisages completion and test operations at the reactor sometime around 2005. The remaining three reactors, whose construction is far behind, could become the object of international tenders to build and operate.

Environmental

Romania is attempting to change its post-Cold War polluter image by paying greater attention to the [environmental issues](#) facing the country. While Romania is incorporating European Union environmental legislation in an attempt to join the EU, the country's environmental record suffered another blow in January 2000 when a devastating cyanide spill from a Romanian gold mine killed thousands of fish and wildlife in the Tisza River in Hungary.

Localized [air pollution](#) from leaded gas and industrial emissions represents a major threat to the environment in Romania. Although the country's [energy consumption](#) has decreased in the past 10 years as factories have cut back on production or closed down altogether, Romania's slow progress in restructuring its energy sector has provided a disincentive for energy saving in the long term. Thus, while the country's [carbon emissions](#) have dropped since 1990, Romania's [energy and carbon intensity](#) remain high, and the country's ability to maintain its reduction in carbon emissions and meet its Kyoto Protocol obligations in the [21st century](#) is in question.

BULGARIA

Bulgaria has been slow to implement economic and political reform since the country's 1989 revolution removed Communist Party leader Todor Zhivkov. After a decade of stagnating economic growth and

halting political reform, in June 2001, Bulgaria became the first country in post-communist eastern Europe to return a former monarch to power, as Bulgarians voted the National Movement for Simeon II into power in a general election. Simeon II, a successful businessman in Spain who was ousted from power by the Communists in a rigged election in 1946, returned to Bulgaria and formed his movement of radical young reformers and supporters of European integration only in April 2001 after the Constitutional Court banned him from running for president.

In July 2001, Simeon Saxe-Coburg was approved as the country's new prime minister, saying his priorities would be to bring Bulgaria into the European Union and NATO, to fight corruption, and to secure fast and stable economic growth. Saxe-Coburg's government, a coalition that includes a party of ethnic Turks, has pledged to improve people's lives in 800 days, speed up reforms, cut taxes, attract foreign investors, and boost the fledgling capital market. Bulgaria began EU membership talks in 2000 and hopes to join the union between 2004 and 2007.

Oil

Bulgaria has small indigenous oil reserves and produced only 1,000 bbl/d of oil in 2000. With the transition to a market economy and the end of favorable Eastern bloc prices for Soviet oil, Bulgarian oil consumption decreased by more than 50% from 1989, when Bulgaria consumed 235,200 bbl/d of oil, to 1997, when the country consumed just 106,800 bbl/d. Domestic demand has picked up in the past four years, with Bulgaria's consumption rising to 117,000 bbl/d in 2000 and projected consumption increasing to 121,000 bbl/d in 2001.

In October 1999, Russian oil major Lukoil bought a 58% stake in Bulgaria's largest refinery, the 134,000-bbl/d Neftochim refinery. Lukoil, which paid \$101 million for the stake, pledged to invest \$408.3 million by 2005 to upgrade the refinery to expand production lines and to meet environmental standards. Neftochim has an 85% share of the domestic market for refined products.

Natural Gas

Bulgaria has minimal natural gas reserves, forcing it to rely on imports for almost all of its natural gas consumption. Bulgaria's gas production increased from 0.4 Bcf in 1989 to 2.5 Bcf in 1993, but has since slipped to 0.7 Bcf in 1999. In May 2001, Bulgaria signed its first natural gas concession to a foreign firm, allowing British energy company Petreco to extract natural gas from Bulgaria's sector of the Black Sea. Under the 25-year contract, Petreco will be able to extract gas from the offshore Galata deposit, which has estimated reserves of 53 Bcf. Petreco has announced plans to extract 14 Bcf of gas per year, starting in 2002.

Bulgaria's natural gas consumption, meanwhile, has dropped from 222.8 Bcf in 1989 to a low of 119.0 Bcf in 1999, driven mainly by a decrease in demand from the industrial sector. State-owned Bulgargas is the country's only gas importer and the owner of the 1,380-mile pipeline network, and government officials have ruled out breaking up the monopoly in the near future. However, in June 2001, the Bulgarian government approved draft amendments to the country's energy act in a partial liberalization of the gas market. In line with an EU directive, as of January 2002, the government will allow large industrial gas consumers and gas distributors to negotiate imports of gas directly from external suppliers, circumventing Bulgargas.

Coal

Coal is Bulgaria's most significant natural resource, with reserves estimated at 2.9 billion short tons, almost all of which is lignite or sub-bituminous coal. The country's biggest coal deposit, with estimated lignite reserves of 2 billion short tons, is the Maritsa Iztok coal basin, located in the southeast of the country. The Maritsa coal fields produce low-quality lignite coal with high ash and high sulfur content, but the adjacent Maritsa Iztok power plants are designed to work with this coal. Of the 27 Mmst of coal mined in Bulgaria in 2000, 22 Mmst was mined at Maritsa Iztok, while Bobov Dol, the second largest coalfield, produced approximately 2 Mmst.

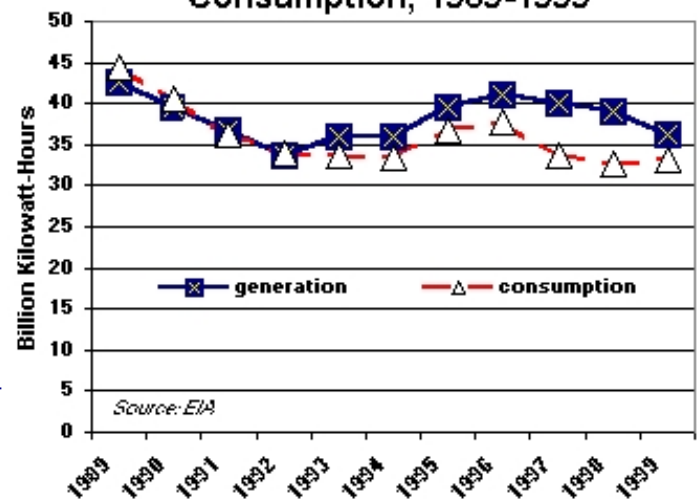
In 1997, the Bulgarian government adopted an energy strategy that placed considerable emphasis on developing the country's coal sector, with total investment estimated at \$362 million up to 2010. The strategy aims to increase output at the Maritsa Iztok mines to the pre-1989 level of 41 Mmst between 2005 and 2010 by developing the Troyanovo-1, Troyanovo-2, and Troyanovo-3 mines at the Maritsa Iztok basin. However, the mines have seen almost no investments over the past 10 years, and their ability to boost output will depend heavily on the rehabilitation of two of the adjacent power plants, as well as the construction of a new power plant to replace a third plant that is scheduled to be decommissioned.

Bulgaria slightly revised its coal sector strategy in 2000, calling for the closure of non-viable mines and the privatization of those that have attracted investor interest. In 2000, Bulgaria had 26 operating mines, 13 of which the government considered to be commercially viable. Privatization procedures have been started for 11 of the coal-mining companies.

Electricity

Bulgaria's installed electric capacity in 1999 was 12.5 GW, made up of 5.8 GW of thermal power (all coal), 3.8 GW of nuclear power, and 2.9 MW of hydropower. With domestic electricity consumption of 33.2 Bkwh in 1999, Bulgaria has significant spare capacity, even with nearly 2.6 MW of installed capacity currently inoperable. In 2000, Bulgaria produced 41 Bkwh of electricity, with coal-fired power plants generating 19.8 Bkwh, the Kozloduy nuclear plant accounting for 18 Bkwh, and hydropower supplying the remaining 3.2 Bkwh. The Maritsa Iztok complex, made up of three coal-fired power plants with combined capacity of 2,950 MW, accounted for nearly two-thirds of the power generated by coal-fired plants.

Bulgarian Electricity Generation and Consumption, 1989-1999



In 1998, the Bulgarian parliament began to liberalize the country's power sector by unbundling the generation, transmission, and distribution activities of the national electricity company, NEK. In the summer of 2000, the largest power plants and distribution networks, including the country's Kozloduy nuclear power plant, were separated from NEK, creating seven generation and seven distribution companies. Six of the seven independent power generators registered a profit in 2000, and some of them (but not Kozloduy) will be eligible for privatization.

NEK retains responsibility for central power trading (as the single buyer and seller of electricity), system operation, transmission network management, and system planning, as well as control over the the country's biggest hydropower plants. Introduction of open access is scheduled for 2002, and in September 2001, Milko Kovach, Bulgaria's new head of the State Agency on Energy and Energy Resources, announced that the country plans to start liberalizing its energy market in line with EU accession requirements and IMF recommendations next year.

Bulgaria is eager to attract investment to its aging power sector in order to make necessary upgrades and to maintain its status as the leading electricity exporter in the Balkans. With approximately 40% of Bulgaria's generating capacity scheduled to be retired by 2010, Bulgaria needs investment in the power sector, especially in the Maritsa Iztok coal-fired complex, which is the only Bulgarian facility fueled by local low-quality lignite fuel. Losing that capacity would force Bulgaria to become almost entirely dependent on higher-quality coal imports, most of which currently come from Russia.

In June 2001, Bulgaria sealed two investment deals for the Maritsa Iztok complex. Under a \$470-million deal with Entergy (U.S.), four generation facilities at the Maritsa Iztok III power plant, which has a

combined capacity of 840 MW, will be rehabilitated and retrofitted with equipment to treat sulfuric emissions. The project, which is expected to take approximately three and a half years to complete, will extend the operating life of the plant by up to 20 years. A \$930-million deal with AES Corp. (U.S.) will build a new, 670-MW coal-fired plant at the Maritsa Iztok I plant, replacing an older unit. Construction of the new plant is expected to start by the end of 2001 or in early 2002. At a combined \$1.4 billion, the deals represent the largest foreign investments in Bulgaria to date.

Rheinbraun (Germany) also is interested in investing in the 1,440-MW Maritsa Iztok II power station. However, Rheinbraun has stated that it is only interested in rehabilitating the four newest 210-MW units since it considers the four older 150-MW units to be inefficient. Although this would reduce the plant's capacity to 840 MW, the loss of output would not be noticeable since the four 150-MW units currently operate at an efficiency level of 22%. In addition, Bulgaria and Turkey have been attempting to re-launch the stalled \$300-million, 170-MW Gorna Arda hydro project, which would rehabilitate the existing dams at the complex and build and operate a new water cascade of three hydropower stations. Bulgaria also is seeking investors for the \$72-million Jadenitsa hydropower project and for the \$50-million Tsankov Kamak hydropower station.

Nuclear

Bulgaria has one nuclear power plant, the 3,760-MW, Soviet-designed Kozloduy plant located 120 miles north of Sofia. The plant's six reactors include four 440-MW pressurized water reactors without safety encasement (similar to Chernobyl), which were installed between 1974 and 1982, and two more modern, 1,000-MW reactors that have safety enhancements. Although the Kozloduy plant generated 44% of the country's electricity in 2000, Bulgaria bowed to EU safety concerns in 1999 and agreed to close down two of the older 440-MW reactors (units 1 and 2) by 2003, earlier than Bulgaria had wanted. Liberalization of the country's energy market and rising electricity prices should allow Bulgaria to shut down the two reactors without hurting the country's power generation capacity.

The EU is pressing Bulgaria to close down the other two 440-MW reactors (units 3 and 4) as part of accession talks. The EU has called for closure by 2006, but Bulgaria has insisted that the reactors will be permanently closed only after 2008. The operational lifespan of the two units expires in 2010-2012. Bulgaria already has spent more than \$100 million on upgrading work at Kozloduy, and in February 2001 the country signed a \$76-million contract with Westinghouse to upgrade the two 1,000-MW units.

MOLDOVA

Moldova* became independent in 1991 with the collapse of the Soviet Union, but in the decade since then, the country has been beset by political and economic turmoil. The Trans-Dnistria region, home to the Russian Red Army 14th Division during the Soviet era, declared its independence from Moldova and proclaimed the Trans-Dnistrain Republic, leading to a brutal civil war in the mid 1990s. Fighting stalemated, leaving the region with de facto independence but there has been no formal resolution to the conflict.

Moldova's economy has contracted severely during the last 10 years, and reform has been slow. The country's economic downturn has resulted in widespread disaffection, which the Communist Party capitalized on in winning an absolute majority in the February 2001 parliamentary elections. In the energy sphere, Moldova relies almost entirely on Russian and Romanian imports to meet domestic demand.

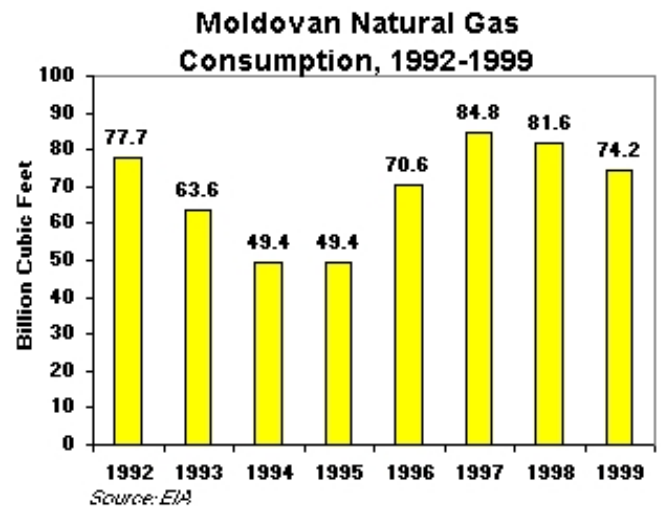
Oil

Moldova has minimal proven oil reserves, and the country currently does not produce any oil, although a plan to develop the Valenskoye field in the southern region of the country could yield up to 2,000 bbl/d. Since Moldova does not have any refineries, the country must rely on imported petroleum products to meet domestic demand. Following the breakup of the Soviet Union, Moldova's oil consumption plummeted by 71%, from 56,900 bbl/d in 1992 to just 16,700 bbl/d in 1996, as the country's economy contracted and fighting broke out in the separatist Trans-Dnistria region. Consumption has rebounded slightly and leveled off at around 20,000 bbl/d, with 2001 consumption projected to reach 21,000 bbl/d.

Just four years ago, Moldova imported the majority of its oil products from Russia, but currently Romania and Ukraine supply Moldova with nearly 99% of its oil demand. Oil products account for over 40% of Moldova's energy imports, which make up nearly one-third of the country's total imports.

Natural Gas

Moldova has estimated natural gas reserves of 882 Bcf, almost all of which are in the Viktorovskoye field. Moldova plans to develop this field in partnership with foreign investors, but production at the field--which would be around 0.1 Bcf per year--has not yet begun, leaving Moldova entirely dependent on Russia for its natural gas supplies. Since Moldova became independent in 1992, the country's natural gas consumption has been wildly inconsistent, with consumption falling to just 49.4 Bcf in 1994 and jumping to 84.8 Bcf in 1997 before dropping to 74.2 Bcf in 1999. This pattern reflects the economic contraction and rise in fighting between Moldova and the breakaway Trans-Dniestrian Republic in the mid-1990s, followed by the relative stability later in the decade as the fighting stalemated and gave way to negotiations.



Moldova's natural gas consumption has begun to decline again as Russian suppliers--including Gazprom and Itera--have reduced supplies to the country due to its increasing debts. According to Mihai Lesnic, chairman of the state natural gas distribution company Moldovagaz, Moldova has run up a gas debt of approximately \$420 million to Russia, with the Trans-Dniestrian region, which consumes 40% of the gas imports, responsible for nearly \$360 million of that debt. Currently, Moldova buys part of its gas supplies from from Gazprom for \$80 per 1,000 cubic meters. Moldova also purchases natural gas from Itera for \$65 per 1,000 cubic meters, but on tougher terms of payment.

Moldovan Prime Minister Vasile Tarlev has complained that \$80 per 1,000 cubic meters of natural gas is an unbearable burden for most Moldovan businesses and individual consumers, resulting in non-payment and contributing to Moldova's mounting debt. In October 2001, Tarlev and Gazprom Chairman Alexei Miller initialed a preliminary agreement to reduce the burden, with natural gas supplies to be paid in cash at \$60, and the remainder in the form of crops and other commodities from Moldova at \$20. In addition, Russia and Moldova are attempting to negotiate a settlement to Moldova's natural gas debts, with one option allowing Russia to take part in the privatization of a number of Moldovan businesses. Russia restructured Moldova's natural gas debts in 2000, but the measure proved insignificant, forcing Moldova to ask for a further reduction of the debt.

Coal

Moldova has a small coal industry, with reserves estimated of approximately 10 Mmst and production of 35,000 short tons in 1999. This represented a sharp decline from the peak of around 290,000 tons produced in the late 1980s, when Moldovan coal enjoyed a higher level of demand in the combined markets of the Soviet Union. However, most Moldovan coal production is low-grade bituminous coal, used in construction rather than power generation. For energy purposes, Moldova imports approximately 620,000 tons of hard coal per year. Moldova's coal consumption, like its production, has dropped significantly in the past decade, from 2.96 Mmst in 1992 to just 64,000 short tons in 1999.

Electricity

Since receiving its independence in 1992, Moldova has gone from being a net power exporter to a net importer as power-generating capacity has been reduced due to under investment, warfare, and the country's economic contraction. Moldova's current 1-GW power-generating capacity is less than one-third of the country's 3.1-GW capacity in 1992. The country's power generation has been reduced from 10.6 Bkwh in

1992 to 4.2 Bkwh in 1999, while Moldova's domestic electricity consumption has dropped from 9.8 Bkwh in 1992 to 5.8 Bkwh in 1999.

As a result, Moldova is now dependent on imports for nearly 15% of its electricity consumption. Most of these supplies come from Romania and Ukraine. As of July 2001, Ukraine was exporting about 100 million kilowatt-hours of electricity per month to Moldova, with technical capacity to increase supplies to 250 million kilowatt-hours per month. Romania periodically has cut off supplies to the Moldovan grid due to non-payment of bills, and Moldova's debt for Ukrainian electricity is approximately \$30 million. Russia is eager to export its electricity to Moldova as well, and in August 2001, Russia and Ukraine re-connected their electricity grids and agreed on joint exports of electricity to Moldova.

Moldova's power sector continues to suffer from consumer non-payment of bills, leaving the countries' power-generating facilities short of cash for investment and leading to an energy crisis in northern Moldova earlier in 2001. In parts of northern Moldova served by the northern and north-western energy distribution grids, electricity was out for 12 or more hours per day. In April 2001, Moldova passed several urgent measures to resolve the crisis, including finally allowing electricity suppliers to cut off indebted customers. Itera and Spanish utilities company Union Fenosa have expressed interest in obtaining Moldova's northern and north-western electricity distribution networks, both of which are in bad financial condition.

In August 1999, Union Fenosa purchased three of Moldova's regional energy distribution networks, including the network supplying Chisinau. Under the \$25-million sale agreement, Union Fenosa is committed to making further investments of \$60 million over five years to upgrade and modernize energy infrastructure. In August 2001, Union Fenosa signed a \$267-million, 10-Bkwh, 5-year power supply agreement with the Cuciurgan power station, which is controlled by the secessionist Trans-Dnistrian Republic. The agreement is expected to cover 70%-80% of the needs of the three power distribution grids.

In an effort to raise much needed capital, in November 2000, Moldova sought to sell 70% stakes in three gas-fired power plants with combined capacity of 318 MW. However, Moldova's offer to sell the CET1 and CET2 plants near Chisinau and the 240-MW Balti plant in the north failed to attract any bids. A second tender was launched in March 2001.

** All Moldova figures include Moldova proper and the Trans-Dnistrian Republic.*

Table 1. Economic and Demographic Indicators for Southeastern Europe

Country	Gross Domestic Product (GDP), 2000E (Billions of U.S. \$)	Real GDP Growth Rate, 2000 Estimate	Real GDP Growth Rate, 2001 Projection	Per Capita GDP, 2000E	Population 2000E (Millions)
Bulgaria	\$12.0	5.8%	3.9%	\$1,468	8.2
Moldova	\$1.3	1.9%	3.5%	\$300	4.3
Romania	\$36.7	1.6%	5.2%	\$1,647	22.3
Total/weighted average	\$50.0	2.6%	4.8%	\$1,438	34.8

Source: WEFA

Table 2. Energy Consumption and Carbon Dioxide Emissions in Southeastern Europe, 1999

Country	Total Energy Consumption (Quadrillion Btu)	Petroleum	Natural Gas	Coal	Nuclear	Hydro-electric	Other Electricity	Net Electricity Imports	Carbon Dioxide Emissions (Million metric tons of carbon)
Bulgaria	0.84	27.1%	14.0%	36.7%	19.1%	3.8%	0%	-0.6%	13.5
Moldova	0.15	22.7%	54.4%	7.3%	0%	1.9%	0%	13.7%	2.0
Romania	1.64	30.3%	37.8%	17.6%	3.5%	11.2%	0%	-0.5%	25.7
Total/weighted average	2.63	28.8%	31.1%	23.1%	8.3%	8.3%	0%	--	41.2

Source: Energy Information Administration

Note: percentages may not add up to 100% due to rounding.

Table 3. Energy Supply Indicators, Southeastern Europe

Country	Crude Oil Reserves, 1/1/01 (Million Barrels)	Natural Gas Reserves, 1/1/01 (Trillion Cubic Feet)	Coal Reserves, 1/1/01 (Million Short Tons)	Petroleum Production, 2000 (Thousand Barrels Per Day)	Natural Gas Production, 1999 (Billion Cubic Feet)	Coal Production, 1999 (Million Short Tons)	Electric Generating Capacity, 1999 (Gigawatts)	Crude Oil Refining Capacity, 1/1/01 (Thousand Barrels Per Day)
Bulgaria	1-15	0.2	2,988	1	0.7	28.7	12.4	134
Moldova	Minimal	Minimal	Minimal	0	0	0.04	1.0	0
Romania	1,200-1,400	4.0-13.2	3,980	127.4	501.5	27.6	22.2	522
Total	1,201-1,415	4.2-13.4	6,968	128.4	502.2	56.3	35.6	656

Source: Energy Information Administration

Sources for this report include: CIA World Factbook, U.S. Department of Commerce's Business Information Services for the Newly Independent States, the U.S. Energy Information Administration, PlanEcon, Radio Free Europe/Radio Liberty, U.S. Department of State, WEFA Eurasian Economic Outlook, as well as Eastern Bloc research and news reports.

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Links to other U.S. government sites:

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[CIA World Factbook 2000](#)

[U.S. Department of Commerce, Business Information Service for the Newly Independent States \(BISNIS\): Moldova](#)

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